Project Introduction

The ultimate goal of the SOAR program is to develop robust hardware and algorithms for low light, passive terrain sensing. The SOAR system will provide NASA with a solution for real-time obstacle avoidance for large and small unmanned air platforms. During Phase-I, we will collect images with all of the leading low-light camera technologies. The image data will be used to derive, test, and enhance a passive terrain sensing algorithm based-on state-of-the-art, visual odometry and dense stereo algorithms. At the end of Phase-I, we will recommend the optimal hardware, algorithm, and computing platform for full prototype development during Phase-II. The factors used to make the recommendation include cost, range accuracy, size, power consumption, algorithm execution time, etc.

Primary U.S. Work Locations and Key Partners

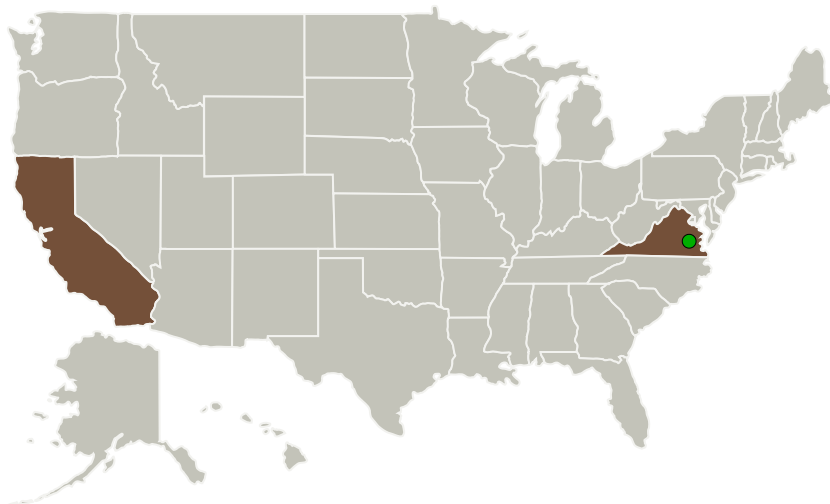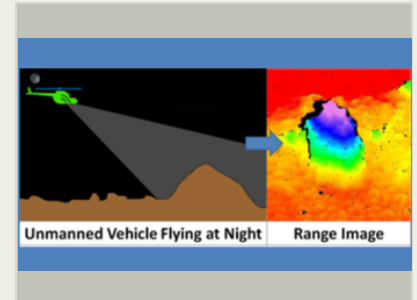| Organizations Performing Work	Role	Type	Location
Opto-Knowledge Systems, Inc.(OKSI)	Lead Organization	Industry	Torrance, California
● Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

SOAR - Stereo Obstacle Avoidance Rig Project Image

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Primary U.S. Work Locations	
California	Virginia

Project Transitions

▶ **June 2014:** Project Start

✔ **December 2014:** Closed out

Closeout Documentation:
- Final Summary Chart*(https://techport.nasa.gov/file/140498)*
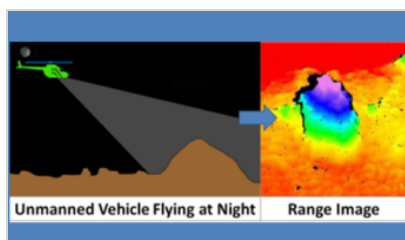
Images

Project Image
SOAR - Stereo Obstacle Avoidance
Rig Project Image
*(https://techport.nasa.gov/imag
e/133892)*

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Opto-Knowledge Systems, Inc. (OKSI)

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:
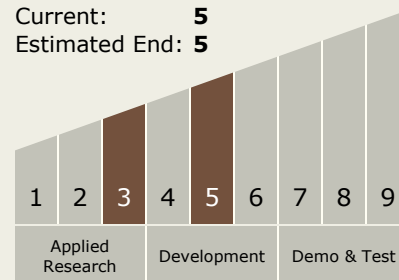Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Scott Foes

Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**

1	2	3	4	5	6	7	8	9
Applied Research			Development			Demo & Test		

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https://techport.nasa.gov/view/18361

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Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
  └ TX11.2 Modeling
      └ TX11.2.2 Integrated Hardware and Software Modeling

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System